1. (Previously Presented) A sensor for measuring a parameter, comprising:

a substrate;

a drain disposed on the substrate;

a source disposed on the substrate;

a channel region disposed between the drain and the source;

a conductive guard ring disposed outside the channel region;

a sensitive gate layer with a potential that depends on the parameter;

an air gap disposed between the gate layer and the channel region; and

an insulating layer disposed between the guard ring and the channel region, the insulating layer having a surface on a portion of which is disposed a ring structure having a surface conductivity different from a surface conductivity of a remaining portion of the surface of the insulating layer to thereby increase an amount of time in which the potential of the channel region equals the potential of the conductive guard ring.

2. (Previously Presented) The sensor of claim 1, further comprising surface profiling having at least one elevation and at least one depression and disposed between the guard ring and the channel region.

3. (Previously Presented) The sensor of claim 2, further comprising a second insulating layer disposed over the channel region.

4. (Previously Presented) The sensor of claim 2, where the ring structure comprises an insulating material disposed on the insulating layer.

5. (Previously Presented) The sensor of claim 2, where the ring structure comprises a concentric structure.

6. (Previously Presented) The sensor of claim 2, where the parameter comprises a gas concentration.

7. (Previously Presented) The sensor of claim 2, where the parameter comprises an ion concentration.

8. (Previously Presented) A sensor for measuring a concentration of an ambient parameter, comprising:

a substrate;

a channel region formed in the substrate;

a conductive guard ring arranged outside the channel region;

a sensitive gate layer whose potential depends on the concentration of the ambient parameter, an air gap disposed between the gate layer and the channel region;

an oxide layer disposed between the guard ring and the channel region, a surface of the oxide layer having a ring structure arranged on a portion thereof, the ring structure having a surface conductivity different from a surface conductivity of a remainder of the surface; and

a source and a drain forming a field-effect transistor, the transistor being spatially separated

from the air gap between the gate layer and the channel region, the transistor having a gate that is connected by an electrode to the channel region, the different surface conductivities between the ring structure and the remainder of the surface increasing an amount of time in which the potential of the channel region equals the potential of the conductive guard ring.

9. (Previously Presented) The sensor of claim 8, where the ambient parameter comprises a gas.

10. (Previously Presented) The sensor of claim 8, further comprising surface profiling having at least one elevation and at least one depression and disposed between the guard ring and the channel region.

11. (Previously Presented) The sensor of claim 8, further comprising an insulating thin layer disposed over the channel region.

12. (Previously Presented) The sensor of claim 8, where the ring structure comprises an insulating material disposed on the oxide layer.

13. (Previously Presented) The sensor of claim 8, where the ring structure comprises a concentric structure.

14. (Previously Presented) The sensor of claim 8, where the ambient parameter comprises an ion concentration.

15. (Previously Presented) A sensor for measuring an ambient parameter, comprising:

a source;

a drain;

a channel region between the source and the drain;

a conductive guard ring outside the channel region;

a gate layer with a potential that depends on the ambient parameter;

an air gap between the gate layer and the channel region; and

an insulating layer between the guard ring and the channel region, the insulating layer having a surface on a portion of which a ring structure is arranged having a surface conductivity different from a surface conductivity of a remaining portion of the surface of the insulating layer to thereby increase an amount of time in which the potential of the channel region equals the potential of the conductive guard ring.

16. (Previously Presented) The sensor of claim 15, further comprising at least one elevation and at least one depression formed with respect to the insulating layer and between the guard ring and the channel region.

17. (Previously Presented) The sensor of claim 15, where the ambient parameter comprises a gas concentration.

18. (Previously Presented) The sensor of claim 15, where the ambient parameter comprises an ion concentration.

19. (Previously Presented) The sensor of claim 15, where the insulating layer comprises an oxide layer.

20. (Previously Presented) The sensor of claim 15, further comprising an insulating thin layer over the channel region.